



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,177	01/15/2002	Yhean-Sen Lai	25,066 USA	5066

7590 04/21/2005

Theodore Naccarella, Esquire  
Synnestvedt & Lechner LLP  
2600 Aramark Tower  
1101 Market Street  
Philadelphia, PA 19107-2950

EXAMINER

FILE, ERIN M

ART UNIT	PAPER NUMBER
----------	--------------

2634

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

14A

**Office Action Summary**

Application No.

10/047,177

Applicant(s)

LAI, YHEAN-SEN

Examiner

Erin M. File

Art Unit

2634

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10, 12, 14, 16-18, 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8, 9, 11, 13, 15, 19, 22 is/are rejected.
- 7) ☒ Claim(s) 3-7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trans in view of Melas and in further view of Betts.

**Claim 1**, Trans discloses finite input response ([0019]) adaptive filters that are used to decrease the channel response length while reducing inter-symbol interference ([0680]). Both receivers and transmitters will have Decision Feedback Equalizer coefficients for the impulse response channel ([0694]). Trans neither discloses FIR coefficients which correspond to symbol length nor rotating the impulse response coefficients. However, Melas discloses a finite impulse response filter with a plurality of coefficients that correspond to the length of the symbol (col. 3, lines 43-58). Melas discloses finite impulse response system as disclosed leads to reduced effects of noise on a signal (abstract). Because Trans discloses one aim of his invention is to reduce interference noise ([0680]), it would be obvious to one skilled in the art at the time of invention to

Art Unit: 2634

incorporate Melas' teachings into Trans impulse response apparatus. Melas fails to disclose the step of rotating the coefficients of the impulse response, however, Betts discloses a complex finite impulse response (FIR) filter (fig. 1, 123) with multiple coefficients and multipliers (125, 129) for performing coordinate rotation, (Betts, col. 2, lines 13-15). Rotation is also used in the update of the FIR filter coefficients to reduce error. The output of the finite impulse response filter is rotated through an angle of rotation and the resulting rotated complex filter output signal is substantially the listener echo (col. 3, lines 1-3). Because of the advantages given by Betts in the use a rotation it would be obvious to one skilled in the art at the time of invention to incorporate a coefficient rotation into Melas' impulse response system.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2, 8, 9, 11, 13, 15, 19, 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claims 2, 11, 15** recite the limitation, "the first  $L+1$  coefficients of said channel impulse response is maximal", the meaning of this statement is unclear and is therefore rendered vague and indefinite.

Art Unit: 2634

**Claims 8, 9, 13, 19, and 22**, recite a limitation where,

$$FINTF = \bar{C}(|h'_Y|(FV_1 \cdot W) + |h'_{Y+1}|(FV_2 \cdot W) + \dots + |h'_{P-1}|(FV_{P-Y} \cdot W))$$

The claims fail to disclose the meaning or value of  $h_Y$ ,  $F$ , or  $V_n$ . Because these parameters or values are not properly defined, the claims are rendered vague and indefinite. Further, the definition of  $C$  is objected to as it is defined in the claim language as  $C$ , but is shown in the equation as  $C$  with a bar above it.

### ***Claim Objections***

5. Claims 3-7 are objected to as dependent upon a rejected claim, however, would be allowable if rewritten in independent form.

### ***Allowable Subject Matter***

6. Claims 10, 12, 14, 16-18, 20, 21 are allowable in view of the known prior art.

### ***Conclusion***


Art Unit: 2634

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin M. File

4.11.2005

  
STEPHEN CHIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800